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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,181	11/17/2003	John E. Minardi	65944-0002	3362

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EXAMINER

CHOI, WILLIAM C

ART UNIT PAPER NUMBER

2873

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,181

Applicant(s)

MINARDI ET AL.

Examiner

William C. Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-37 is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8,11,12,15-18,20,21,38,39 and 44-49 is/are rejected.
- 7) ☒ Claim(s) 6,9,10,13,14,19 and 40-43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1103.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

Receipt of the Information Disclosure Statement (IDS) with copies of the references cited therein, was received on 11/17/2003. An initialized copy of the IDS is enclosed with this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 8, 11, 12, 15, 16, 20, 21, 38, 39 and 44-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Chase (U.S. 5,071,253).

In regard to claim 1, Chase discloses an optical device (Figure 1a), comprising: a first element having a first index of refraction (column 4, lines 7-8, Figure 1a, "16"); and a second element that communicates with the first element and has a second index of refraction (column 4, lines 5-6 & 50-52, Figure 1a, "20"), wherein said first element includes a portion having first and second conductive plates (column 4, lines 9-11, Figure 1, "17a, b"), that element can change the entry direction of a radiated beam into said second element (column 6, lines 16-26), and the radiated beam is substantially

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transmitted through the portion between the conductive layers or plates (Figure 1, re: between "17a, b").

Regarding claim 2, Chase discloses wherein the first element has a variable index of refraction and the second element has a fixed index of refraction (column 4, lines 7-8 & 50-51).

Regarding claim 3, Chase discloses wherein the first element has a first variable index of refraction and the second element has a second variable index of refraction (column 7, lines 24-29, Figure 2a, "16, 16a").

Regarding claim 4, Chase discloses wherein the second variable index of refraction is fixable to a selected value (column 6, lines 1-4).

Regarding claim 5, Chase discloses wherein the first element can change the entry direction of a radiated beam into the second element (column 6, lines 16-26).

Regarding claim 7, Chase discloses wherein the first element includes a refractive layer that is responsive to an electric field (column 4, lines 7-8).

Regarding claim 8, Chase discloses wherein the electric field is variable (column 6, lines 14-26).

Regarding claim 11, Chase discloses wherein the first element includes a refractive layer that is responsive to a magnetic field (column 4, lines 7-8).

Regarding claim 12, Chase discloses wherein the first element includes a refractive layer that comprises a photorefractive material (column 4, lines 7-8).

Regarding claim 15, Chase discloses said device further comprising an adjustment mechanism in communication with the first element to control the first variable index of refraction (column 5, lines 61-65).

Regarding claim 16, Chase discloses wherein the adjustment mechanism is a variable voltage source and wherein applying a variable voltage to the first and second conductive plates results in a variable electric field (column 5, lines 61-65).

Regarding claim 20, Chase discloses wherein the optical device controls and exit direction of the radiated beam to switch between a first and second direction (column 6, lines 5-14).

Regarding claim 21, Chase discloses wherein the optical device controls an exit direction of the radiated beam to scan over a selected range (column 6, lines 5-14).

In regard to claim 38, Chase discloses a method of manufacturing an optical device comprising: providing an active element having a refractive layer having a variable index of refraction (column 4, lines 7-8, Figure 1a, "16") between first and second conductive layers (column 4, lines 9-11, Figure 1, "17a, b"), the first and second conductive layers being comprised to substantially retain the transmission of a radiated beam therebetween (Figure 1, re: between "17a, b"); and coupling the active element to a passive element having a fixed index of refraction to form the optical device (column 4, lines 50-52, Figure 1a, "20"), wherein a voltage applied to the first and second conductive layers results in an electric field (column 5, lines 61-65).

Regarding claim 39, Chase discloses said method further comprising establishing communication between a variable voltage source and the first and second conductive layers to vary the electric field (column 5, lines 61-65).

Regarding claim 44, Chase discloses wherein the coupling act includes depositing an active element material on a portion of a substrate to form an active element portion and a passive element portion (Figure 1a, "16, 20").

In regard to claim 45, Chase discloses a method of manufacturing an optical device, comprising: providing a first element having a first index of refraction (column 4, lines 7-8, Figure 1a, "16"); providing a second element having a second index of refraction and establishing communication between the first and second elements (column 4, lines 50-52, Figure 1a, "20"), wherein the first element has a portion that includes first and second conductive plates (column 4, lines 9-11, Figure 1, "17a, b"), which substantially retain the transmission of a radiated beam therebetween ((Figure 1, re: between "17a, b").

Regarding claim 46, Chase discloses wherein the first index of refraction is variable (column 4, lines 7-8).

Regarding claim 47, Chase discloses wherein the second index of refraction is variable (column 7, lines 24-29, Figure 2a, "16a").

Regarding claim 48, Chase discloses wherein the second index of refraction is fixable (column 6, lines 1-4).

Regarding claim 49, Chase discloses wherein the second index of refraction is fixed (column 4, lines 50-52).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Chase as applied to claim 16 above, and further in view of Jones et al (U.S. 5,307,185).

Regarding claims 17 and 18, Chase discloses first and second conductive plates as set forth above, but does not specifically disclose wherein said plates comprise metal or an electrically conductive material deposited on non-conductive plates. Within the same field of endeavor, Jones et al teaches that it is well known in the art for conductive plates of variable refractive index optical elements to comprise metal or an electrically conductive material deposited on non-conductive plates (i.e. ITO) (column 5, lines 9-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the conductive plates of Chase to comprise metal or an electrically conductive material deposited on non-conductive plates since Jones et al teaches that it is well known in the art to do so.

Allowable Subject Matter

Claims 22-37 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented

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in claims 22-37: an optical device comprising an active element having first and second conductive substrates, first and second orienting layers and a refractive layer as claimed, specifically further comprising a passive element, wherein one of the active and passive element can change an entry direction of a radiated beam into the other of the active and passive element and wherein the beam is substantially transmitted through the active element between the first and second conductive substrates.

Claims 6, 9, 10, 13, 14, 19 and 40-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 6: an optical device comprising first and second elements having respective indices of refraction as claimed, specifically wherein the first element can change the entry direction of the radiated beam into the second element to cause total internal reflection of the beam in the second element.

The prior art fails to teach a combination of all the claimed features as presented in claims 9 and 10: an optical device comprising first and second elements having respective indices of refraction as claimed, specifically further comprising first and second orienting layers disposed on the first and second conductive plates, facing each other with the refractive layer disposed between said orienting layers.

The prior art fails to teach a combination of all the claimed features as presented in claims 13 and 14: an optical device comprising first and second elements having

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respective indices of refraction as claimed, specifically wherein the first element includes a liquid crystal layer that acts as a refractive layer.

The prior art fails to teach a combination of all the claimed features as presented in claim 19: an optical device comprising first and second elements having respective indices of refraction as claimed, specifically wherein a radiated beam at an interface between the first and second elements includes a spurious signal and wherein at least one of the first and second elements has a length that attenuates the spurious signal to a predetermined desirable level.

The prior art fails to teach a combination of all the claimed features as presented in claims 40-42: a method of manufacturing an optical device providing an active element having first a refractive layer between first and second conductive layers as claimed, specifically further comprising depositing a first and second orienting layer on the first and second conductive layers, respectively, wherein the refractive layer is sandwiched between the first and second orienting layers.

The prior art fails to teach a combination of all the claimed features as presented in claim 43: a method of manufacturing an optical device providing an active element having first a refractive layer between first and second conductive layers as claimed, specifically wherein the refractive layer is a liquid crystal layer and wherein the method includes a depositing act that comprises aligning the liquid crystal molecules in heterotropic alignment.

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (571) 272-2324. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W.C.

William Choi
Patent Examiner
Art Unit 2873
July 15, 2005


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